

**A critical appraisal of “Additional effects of acupuncture on early
comprehensive rehabilitation in patients with mild to moderate
acute ischemic stroke: a multicenter randomized controlled trial ”**

By

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Abstract

The following paper is a critical appraisal of the research article “Additional effects of acupuncture on early comprehensive rehabilitation in patients with mild to moderate acute ischemic stroke: a multicenter randomized controlled trial ”. This appraisal fulfills the requirement for a Doctor of Physical Therapy Evidence Based Practice course, as well as answers a clinical question regarding the effects of acupuncture on motor function in post stroke patients.

This critical appraisal examines the strengths and weaknesses of the introduction, methods, results, and discussion of the research article. Further, discussion of the clinical relevance, application, and limitations of the research conducted were analyzed and recorded in this paper. The results from this study showed that acupuncture is safe and has additional effects in improving neurological deficits, swallowing disorders, cognitive impairment, and lower extremity motor function, but has no significant improvements for upper extremity motor function. Analyzing results of current research is important for me as a student physical therapist to consider whether I would choose to implement this in future stroke patients.

Key words

Acupuncture, Early Rehabilitation, Stroke, Critical Appraisal, Motor Function

Introduction

Acupuncture treatment is a new, controversial topic in the Physical Therapy profession. The question about whether acupuncture is effective and/or safe has been discussed and researched for many years. The purpose of this research article is to demonstrate whether acupuncture can improve neurological, functional, and cognitive impairments in patients who suffered an acute ischemic stroke. Evidence based practice is important in the Physical Therapy profession in order to determine the validity and reliability of research interventions before use in a clinical setting. Therefore, the purpose of this critical appraisal is to determine the quality of the research article and interventions presented, as well as the safety and effectiveness of acupuncture treatment. The clinical question being addressed is “What are the effects of acupuncture on motor function in post stroke patients?”

Methods

When searching for research articles, the database used was PubMed. The keywords used to narrow down the search were “Acupuncture”, “Stroke”, and “Hemiplegia”. The first limitation placed on the search was “free full text” so that articles that matched the keywords were free to access on PubMed. The other limits placed on the search were “published in the last 10 years” and “Humans”. These limitations were used so that the articles had up to date techniques and were not just testing on animals. An article was included if there was a large amount of patients involved in the study. The effects of a stroke can manifest differently in different people, so having a large population size to compare results between is ideal. The population was narrowed to ages between 35 and 90 years old, as this is where you see the

greatest amounts of a stroke occur. An article was excluded if patients did not have a stroke within the past 2 years, which increases the risk of comorbidity. On PubMed, there were a total of 22 search results that included acupuncture on motor control and function in the elderly population.

The article selected for appraisal was published in volume 16 of the *BMC Complementary and Alternative Medicine* journal. The study took place in Zhejiang, China at Zhejiang Chinese Medical University, and the article was published in 2016. All of the subjects came from 2 cities, either Hangzhou, China or Jiaxing, China, so all recruitment took place in the same geographic location. The authors of this study include Lifang Chen, Jianqiao Fang, Ruijie Ma, Xudong Gu, Lina Chen, Jianhua Li and Shouyu Xu. I decided to do a critical appraisal of this article because it had interesting details pertaining to my question and even more interesting details about various aspects of acupuncture therapy that I wanted to explore.

Results

Summary of the study

It is known that stroke patients who receive therapy soon after suffering a stroke are more likely to have better functional outcomes. While acupuncture is an accepted treatment throughout China as part of an early rehabilitation program, some research studies show that acupuncture has no effect on functional outcomes, activities of daily living, or quality of life. The purpose of this clinical study is to demonstrate whether acupuncture can improve neurological, functional, and cognitive impairments in patients who suffered an acute ischemic stroke. Two-hundred and fifty patients, between the ages of 35-80 years old, were randomly placed into two treatment

groups: those who received acupuncture treatment for 3 weeks and those who only received standard stroke rehabilitation. Throughout a 7 week period, both primary and secondary outcomes were measured using seven different evaluation tools. For the primary outcome measurements (NIHSS), result values showed a significant improvement from acupuncture therapy. For the secondary outcome measurements (FMA, VFSS, MMSE, MoCA), result values showed a significant improvement from acupuncture therapy with every assessment tool except FMA. When comparing values from week 0 - week 7, only the FMA upper extremity sub-scale values did not see any improvement in scores. Measurement tools assessing safety of acupuncture found a low incidence of mild symptoms. This clinical study showed that improvements in neurological deficits, lower extremity motor function, swallowing disorder, and cognitive impairment can be achieved through the safe use of acupuncture treatment in stroke patients.

Appraisal of the study introduction

The introduction is comprehensive and adequately provides the reader with enough background information to understand what acupuncture therapy is and the importance of why it's needed. The information presented is straightforward and to the point, providing the reader accurate information about both the positive and negative results of acupuncture therapy. The authors used a sufficient number of literature references from several credible journals to provide clear statistics and a sound rationale. The aim of this study is to determine the effectiveness of acupuncture therapy to improve neurological deficits, motor function, swallowing disorder, and cognitive impairment in patients who suffered an ischemic stroke.

Although great detail was provided about acupuncture therapy, a more thorough explanation could have been provided as to why this approach is being used instead of standard stroke rehabilitation. Standard stroke rehabilitation is the primary therapy provided to post-stroke patients, so more detail needs to be added about this type of treatment approach. Additionally, a considerable weakness is that nine articles are more than 10 years old, so some information could be outdated. Overall, the introduction is clear and well written.

Appraisal of the study methods

This study is an experimental, multi-center randomized control trial. A strength of this article is the large population size of 250 subjects. Randomization of the 250 subjects were computer generated by independent research staff, and clinicians and outcome assessors who analyzed the data and treatment outcomes were blinded to the subjects' group assignment. All groups were managed the same way except for the experimental intervention: acupuncture therapy. This study did an excellent job at clearly describing the intervention in detail. The authors first described the acupuncture points used, then went on to describe the position of the patients, what acupuncture needles were used, where the acupuncture needles were inserted, and how long the intervention lasted. With the amount of detail provided, this experiment could be replicated in the future.

One weakness of this research article is the high attrition rate of 9 people. This attrition rate could possibly impact results since all subjects, including the dropouts, were included in the full analysis set (FAS) statistics. The main weakness of this article was that the outcome measures were not described in any detail. The article simply lists the tools used and what each

outcome measure was testing. No evidence was provided that supported the reliability or validity of the outcome measures, and there was no literature describing the use of the outcome measure tools. Also, the article states that “baseline data was collected” from all outcome measures, but does not describe how. They tell us the testing timepoints that the outcome measures were collected, but not enough detail was given to replicate the data collection.

Appraisal of the study results

The results section of this article is written in an organized and clear manner. The authors reported the efficacy of both the primary and secondary outcomes reported in the methods section and the research question, and used tables to present the data in a clear and distinct manner for the readers to view. With the use of tables and flow charts, the information was able to flow together nicely and in a well organized format. A significant interaction was found between time and group for the NIHSS, VFSS, MMSE, and MoCA outcome measures in table 3. Changes in baseline values (week 7-week 0) were statistically significant with the NIHSS, VFSS, MMSE, and MoCA outcome measures. The research question given in the introduction is addressed several times throughout the results section.

Although the tables and figures are presented clearly and accurately, they are not explained to the full extent in order for readers to comprehend what all the numbers and symbols represent. This is partly due to the fact that the outcome measures were never properly explained in the methods section and the readers really have no idea how the outcome measures are supposed to work. With limited knowledge on the outcome measures, the readers are limited on

knowledge of the statistical analysis results. Another weakness in this critical appraisal is that the numbers are too close to be statistically significant.

Appraisal of the study discussion

In the discussion, the authors did an excellent job at tying in their own results with findings from other research studies as well as further discussing the reasoning behind some of the unexpected findings. The discussion is very objective, and uses other literature to agree or disagree with the effectiveness of acupuncture intervention. Three limitations of the study are recognized and clearly listed, and the author's conclusions are reflective of the results. The conclusion discusses only what needs to be addressed, such as unexpected results or statistically significant findings, and discusses the importance of acupuncture treatment towards multiple dysfunctions and disorders.

Although the discussion is clear and well written, it does not address any clinical significance or clinical application of the research. This is a major weakness in the article as a whole because there is no significance described for practice in the clinic with real patients.

Discussion

This research study looks at the effectiveness of acupuncture on stroke patients who have suffered an acute ischemic stroke. The findings in this study are clinically significant for physical therapists who have patients that do not benefit from standard stroke therapy or have seen no improvements in activities of daily living and quality of life. This study can help to answer my

clinical question since it researches the effects of acupuncture on motor function in both the upper and lower extremities in patients who have suffered a stroke.

Based on the findings from the article, it can be concluded that acupuncture treatment should be used in the clinic when treating stroke patients. Although the results showed no improvement in upper extremity motor function, acupuncture therapy was found to improve neurological deficits, lower extremity motor function, swallowing disorders, and cognitive impairments. Motivation for standard stroke therapy can be hard on patients who have little to no control, so using a therapy technique that doesn't require the patient to work hard shows positive benefits. Also, acupuncture treatment is becoming increasingly used in the clinic by physical therapists, decreasing the cost of use for this intervention. Since the risks for this intervention only include very rare safety issues, the benefits outweigh the risks. To improve the argument of using acupuncture therapy to treat stroke patients, a study could be conducted to compare the benefits of patients who used only standard stroke rehabilitation to those who only used acupuncture therapy.

This research study proved to be valid and reliable when considering the use of acupuncture treatment on future patients. It was well conducted and reported various positive outcomes, giving me confidence to use acupuncture therapy in my future clinic. However, more detail would need to be added to replicate the outcome measures used in this study in the clinical setting. With the information received from the article, the intervention would be safe and easy to apply in the clinic only after specific training and certification on the use of acupuncture treatment. Basic knowledge of acupuncture therapy would not be sufficient or safe to use on future patients.

After analyzing and examining this article, it can be concluded that this research study is good. Although it had some significant weaknesses, the greater amount of strengths and positive results shows that acupuncture therapy can really make a difference in the way we treat patients in the clinic. The authors of this study were successful in communicating the benefits and safety of the intervention, as well as properly providing support and rationale.

Citation:

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